

McKenzie County Water Resource District
Western North Dakota Water Development meeting
December 10, 2009

Overview of current and proposed rural water systems in McKenzie County

System 1 (Watford City area, Central McKenzie County)

- water currently purchased from city of Watford City
 - Treated ground water from the Tobacco Garden Aquifer
 - Water Analysis (*See Attachment 1*)
- Seeking funding of \$2.3 million for expansion of this system

System 2 (Keene/Charlson and Johnson Corners area, Eastern McKenzie County)

- water supplied by the Four Bears Water Treatment Plant, Fort Berthold Water Supply
 - Treated Missouri River Water
 - Water Analysis (*See Attachment 2*)
- In 2005 McKenzie County Commission, Hess Corporation, and State Water Commission cost shared on upsizing and installation of a water line to western boundary of Fort Berthold Indian Reservation (2005)
- Hess Corporation and McKenzie County Commission cost shared installation of service line to Antelope B site which supplies 660,000 gallons per month
- Remaining distribution portion of system funded in 2009 with ARRA funds
- Hess Corporation to be supplied at six additional sites through this system
 - 1 site at 2.5 million gallons per month
 - 1 site at 80,000 gallons per month
 - 4 sites at <30,000 gallons per month
- 1,000,000 gallon storage tank being built near Keene
- Bulk fill station to be installed near this storage facility
- Construction to begin in Spring of 2010 and to be completed by Fall of 2011

System 4 (Alexander service area, Western McKenzie County)

- Seeking funding of \$4.5 million for this project
- Water to be supplied by Williston Regional Water Treatment Plant
 - Treated and softened Missouri River Water
 - Water Analysis (*See Attachment 3*)
- Zenergy, Inc. currently has 10 sites signed up to receive water
 - Each site signed up to receive between 40,000 – 60,000 gallons per month

Other

- Transmission line to bring treated water from the Williston Regional Water Plant to city of Watford City
 - Estimated cost of \$20 million
 - Project includes two reservoirs and bulk fill stations

ATTACHMENT 1

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Range Low High	Sampl Date	Violation	Typical Source
Disinfectants & Disinfection By-Products							
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.)							
Chlorine (as Cl ₂) (ppm)	4	4	0.5	0.21 0.78	2008	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	1	NA	2007	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	NA	80	1	NA	2007	No	By-product of drinking water disinfection
Inorganic Contaminants							
Arsenic (ppb)	0	10	1.06	1.06	2007	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2	2	0.038	0.02 69 0.038	2007	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride (ppm)	4	4	1.07	NA	2007	No	Water additive which promotes strong teeth
Lead - source water (ppb)		15	3	NA	2007	No	Erosion of natural deposits
Nitrate [measured as Nitrogen] (ppm)	10	10	0.24	0.15 0.24	2008	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Radioactive Contaminants							
Radium (combined 226/228) (pCi/L)	0	5	0.764	NA	2003	No	Erosion of natural deposits
Uranium (ug/L)	0	30	0.911	NA	2003	No	Erosion of natural deposits
Contaminants	MCLG	AL	Your Water	Sample Date	# Samples Exceeding AL	Exceed AL	Typical Source
Inorganic Contaminants							
Copper - action level at consumer taps (ppm)	1.3	1.3	1.25	2006	0	No	Corrosion of household plumbing systems
Lead - action level at consumer taps (ppb)	0	15	4.25	2006	0	No	Corrosion of household plumbing systems

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<u>Contaminants</u>	<u>MCLG or MRDLG</u>	<u>MCL, TT, or MRDL</u>	<u>Your Water</u>	<u>Range</u>		<u>Sample Date</u>	<u>Violation</u>	<u>Typical Source</u>
Unregulated Contaminants								
pH (ppm)	N/A	N/A	7.73	N/A	N/A	2007	No	N/A
Total Alkalinity (ppm)	N/A	N/A	473	N/A	N/A	2007	No	N/A
Bicarbonate as HCO3 (ppm)	N/A	N/A	577	NA	N/A	2007	No	N/A
TDS (ppm)	N/A	N/A	1210	N/A	N/A	2007	No	N/A
Total Hardness as CaCO3 (ppm)	N/A	N/A	204	NA	N/A	2007	No	N/A
Sodium Adsorption Ratio (ppm)	N/A	N/A	11.2	N/A	N/A	2007	No	N/A
Sulfate (ppm)	N/A	N/A	504	NA	N/A	2007	No	N/A
Chloride (ppm)	N/A	N/A	16	NA	N/A	2007	No	N/A
Calcium (ppm)	N/A	N/A	43.4	N/A	N/A	2007	No	N/A
Magnesium (ppm)	N/A	N/A	23.1	N/A	N/A	2007	No	N/A
Sodium (ppm)	N/A	N/A	367	N/A	N/A	2007	No	N/A
Potassium (ppm)	N/A	N/A	6.3	NA	N/A	2007	No	N/A
Iron (ppm)	N/A	N/A	0.097	NA	N/A	2007	No	N/A
Manganese (ppm)	N/A	N/A	0.011	N/A	N/A	2007	No	N/A
Nickel (ppm)	N/A	N/A	0.00248	NA	N/A	2007	No	N/A
Zinc (ppm)	N/A	N/A	0.00719	N/A	N/A	2007	No	N/A

EPA requires monitoring of over 80 drinking water contaminants. Those contaminants listed in the table above are the only contaminants detected in your drinking water.

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated contaminants, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

ATTACHMENT 2

FOUR BEARS WATER TREATMENT PLANT

ASTRO-CHEM LAB, INC.

4102 2nd Ave. West

Williston, North Dakota 58802-0972
P.O. Box 972

Phone: (701) 572-7355

WATER ANALYSIS REPORT

SAMPLE NUMBER W-09-3142 DATE OF ANALYSIS 9-21-09
COMPANY McKenzie County Rural Water
CITY Watford City STATE ND
WELL NAME AND/OR NUMBER System 2
DATE RECEIVED 9-11-09 DEPTH
SAMPLE SOURCE Pump Station
LOCATION DE SEC. TWN. RANGE COUNTY
DISTRIBUTION Janet Wirtz

CONDUCTIVITY @ 77°F = 556.0 µMHQS/cm pH = 8.43
RESIDUAL SODIUM CARBONATE = -0.65 MEQ/L HARDNESS = 9.9 Grains/gal
SODIUM ADSORPTION RATIO = 1.73 HARDNESS = 170 mg/L
TOTAL DISSOLVED SOLIDS (CALCULATED) = 431 mg/L
SODIUM CHLORIDE (CALCULATED) = 30 mg/L

CATION	MEQ/L	mg/L	ANION	MEQ/L	mg/L
CALCIUM	2.2	44	CHLORIDE	0.5	18
MAGNESIUM	1.2	15	CARBONATE	0.1	2
SODIUM	2.3	52	BICARBONATE	2.7	165
IRON	0.0	0.0	SULFATE	2.8	133
POTASSIUM	0.1	3	NITRATE-N	0.0	0.0

REMARKS Sampled 9-10-09

ANALYZED BY: C. Jungels

WILLISTON REGIONAL WATER TREATMENT PLANT WATER ANALYSIS REPORT ASTRO-CHEM SITE

	DATE	319 MAIN 12/26/2006	402 12 TH AVE W 12/26/2006	2030 7TH AVE E 12/26/2006	FINISHED AT PLANT 12/26/2006	1214 4TH ST W 4/7/2009	FINISHED AT PLANT 4/21/2009	402 12 TH AVE W 4/29/2009
RESIDUAL SODIUM CARBONATE MEQ/L		-1.40	-1.20	-1.00	-0.70	-1.40	-2.00	-1.80
SODIUM ADSORPTION RATIO		1.81	1.93	2.03	1.91	2.44	2.62	2.59
PH		8.04	7.70	8.30	8.75	7.62	8.20	9.53
TOTAL DISSOLVED SOLIDS mg/l		321	310	354	295	429	450	451
SODIUM CHLORIDE mg/l		36	28	28	28	28	28	8
HARDNESS mg/l		130	120	120	100	140	150	150
CALCIUM mg/l		36	32	36	32	44	40	40
MAGNESIUM mg/l		10	10	7	5	7	12	12
SODIUM mg/l		47	49	51	44	66	74	73
IRON mg/l		0.0	0.2*	0.1	0.0	0.2*	0	0.2*
POTASSIUM mg/l		4	4	4	4	5	5	5
CHLORIDE mg/l		22	17	17	17	17	17	5
CARBONATE mg/l		0	0	0	3	0	0	6
BICARBONATE mg/l		73	73	85	73	85	61	61
SULFATE mg/l		129	125	154	117	203	241	248
NITRATE mg/l						0.0	0	1.3